

CLAIMS:

1. A display device (1) comprising a display panel (2) having a first light-transmissive substrate (3) provided with electrodes (6) at the area of pixels arranged in rows and columns, a second light-transmissive substrate (4) and electro-optical material (5) between the two substrates, an illumination system (8) situated on the side of the second substrate remote from the electro-optical material, said illumination system comprising an optical waveguide (15) of an optically transparent material having an exit face (18) facing the display panel, characterized in that the optical waveguide comprises means for selectively coupling out light to the display panel for a group of rows of pixels or a group of columns of pixels and is provided with means for coupling in light in a direction which is substantially parallel to the exit face.

2. A display device as claimed in claim 1, characterized in that the illumination system (8) comprises at least one backlight (12) and an optical waveguide (15) having at least one entrance face (10) for light, while light from the backlight can be coupled in along the entrance face extending substantially transversely to the exit face (18), and a selectively switchable light switch (21) is situated between the backlight and the entrance face.

3. A display device as claimed in claim 2, characterized in that the illumination system comprises a backlight (12) having an entrance face at the area of at least one end face (10) of the optical waveguide extending substantially transversely to the rows, while light from the backlight can be coupled in along said end face.

4. ~~A display device as claimed in claim 2 or 3, characterized in that the selectively switchable light switch (21) comprises an electro-optical switching device with an electro-optical material (25) between two substrates (23, 24), at least one substrate being provided with strip-shaped electrodes (26, 27).~~

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5. A display device as claimed in claim 1, characterized in that the illumination system comprises sub-segments and at least one backlight (12) with an entrance face for light for each sub-segment, while light from the backlight can be coupled into the sub-segments.

5 6. A picture display device as claimed in claim 5, characterized in that the light from the backlight can be coupled in along an entrance face extending at an angle to the exit face, and selectively switchable light switches (21) are situated between the backlight and segments of the optical waveguide.

10 7. A display device as claimed in claim 1, characterized in that the selectively switchable light switch comprises a switchable reflective mirror.

15 8. A display device as claimed in claim 1, characterized in that the optical waveguide (31) comprises an electro-optical switching device with an electro-optical material (35) between two substrates (33, 34), at least one substrate being provided with strip-shaped electrodes (36, 37) on the side of the electro-optical material.

20 9. A display device as claimed in claim 1, characterized in that the illumination system comprises at least one backlight having an entrance face for light at the area of the optical waveguide, while light from the backlight can be coupled in along an entrance face extending substantially transversely to the exit face, and parts (40) of the backlight are selectively switchable between an on-state, having a high light intensity, and an off-state.

25 10. A display device as claimed in claim 9, characterized in that the backlight comprises a prismatic element (42) at the area of the entrance face.

30 11. A display device as claimed in claim 1, characterized in that the display device comprises drive means (9) for presenting signals to data and column electrodes for the purpose of writing pixels, and for selectively activating a part of the illumination system associated with the group of rows of pixels.

12. A display device as claimed in claim 11, characterized in that the drive means introduce a delay between the presentation of the signals to the data and column electrodes

and the selective activation of the part of the illumination system associated with the group of rows or pixels.

13. An illumination system (8) comprising an optical waveguide (15) of an optically transparent material having an exit face (18), and means for coupling light on at least one entrance face (10) in a direction parallel to the exit face, characterized in that the optical waveguide is provided with means for selectively coupling in light for a part of the exit face.

14. An illumination system as claimed in claim 13, characterized in that the illumination system comprises at least one backlight (12) having an entrance face for light at the area of the optical waveguide (15), while light from the backlight can be coupled in along an entrance face (10) extending substantially transversely to the exit face, and a selectively switchable light switch (21) is situated between the backlight (12) and the entrance face.

15. An illumination system as claimed in claim 14, characterized in that the selectively switchable light switch comprises an electro-optical switching device with an electro-optical material (25) between two substrates (23, 24) which are provided with strip-shaped electrodes (26, 27) on the side of the electro-optical material.

16. An illumination system as claimed in claim 13, characterized in that the illumination system comprises sub-segments and at least one backlight (12) with an entrance face for light for each sub-segment, while light from the backlight can be coupled into the sub-segments.

17. An illumination system as claimed in claim 16, characterized in that the light from the backlight can be coupled in along an entrance face extending at an angle to the exit face, and selectively switchable light switches (21) are situated between the backlight and segments of the optical waveguide.

18. An illumination system as claimed in claim 13, characterized in that the selectively switchable light switch comprises a switchable reflective mirror.

19. An illumination system as claimed in claim 13, characterized in that the optical waveguide comprises an electro-optical switching device (31) with an electro-optical material (35) between two substrates (33, 34), at least one substrate being provided with strip-shaped electrodes (36, 37) on the side of the electro-optical material.

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20. An illumination system as claimed in claim 13, characterized in that the illumination system comprises at least one backlight having an entrance face for light at the area of the optical waveguide, while light from the backlight can be coupled in along an entrance face extending substantially transversely to the exit face, and parts (40) of the
10 backlight are selectively switchable between an on-state, having a high light intensity, and an off-state.

21. An illumination system as claimed in claim 20, characterized in that the backlight comprises a prismatic element (42) at the area of the entrance face.

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